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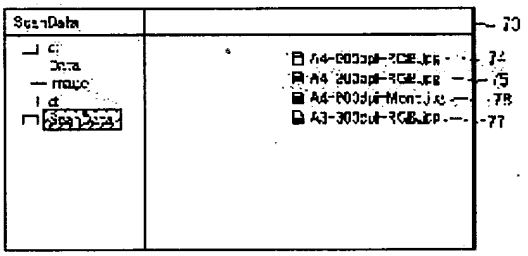
(54) SCANNER SERVER, ITS CONTROL METHOD AND PROGRAM

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a scanner server and its control method by which setting regarding scanning conditions and/or a data format of image data can easily be performed.

SOLUTION: Virtual files with file names in which size of an original, a color mode, resolution and the data format in the case of read by a scanner are indicated is presented to a client. When any of the files is selected at the client, scan is performed according to setting information to be included in its file name and image data is stored with the same file name.



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* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention reads a manuscript and relates to the scanner server which controls the scanner which generates image data from the read manuscript image, and its control approach.
[0002]
[Description of the Prior Art] First, the image reader which reads a manuscript optically and generates digital image data and which is called the so-called scanner is explained.
[0003] Drawing 7 is drawing showing the image processing system containing a conventional scanner and a conventional computer.
[0004] 72 is the scanner which reads the image on a manuscript optically, and it is the client personal computer (PC) which receives the image data generated while it connected with the scanner 72 and 71 directed reading on the scanner 72.
[0005] a scanner 72 -- setting -- 10 -- a pressure plate and 11 -- a glass plate and 12 -- a CCD drive motor, and 13 and 14 -- a head roller and 15 -- a head belt and 16 -- a CCD head and 17 -- a head cable and 18 -- an image-processing unit and 19 -- a host interface and 52 -- a USB cable -- it comes out.
[0006] First, a manuscript is put on the manuscript base 11 of a scanner 72, and a manuscript is pressed down by the pressure plate 10. Next, the scanning program which operates on a computer 71 is started, and after performing various setup at the time of performing a scan using input units, such as a keyboard and a mouse, directions actuation of scanning initiation is performed. A computer 71 publishes a scanning instruction to a scanner 72 through the USB cable 52 in response to actuation of a user.
[0007] A scanner 72 receives the scanning instruction published through the USB cable 52 through the host interface 19. After a scanner's 72 winning popularity and moving the CCD head 16 to a position with the CCD drive motor 12, a fluorescent lamp (not shown) is made to turn on, if a scanning instruction is received.
[0008] Then, the light in which the light of a fluorescent lamp was reflected by CCD from the manuscript through the glass plate 11 is received, driving the CCD drive motor 12 with constant speed, and moving the CCD head 16. CCD changes into an electrical signal the quantity of light which received light, and data are generated based on this. The image data for one manuscript is generated by performing this from the topmost part of a manuscript to the bottom.
[0009] The generated image data is serially transmitted to a client PC 71 through [52] a USB cable, and in a client PC 71, when it receives the image data for one manuscript, it displays on a screen the image with which the scanning program was scanned.
[0010] Moreover, a user can save the image data scanned by performing actuation of saving the image data scanned if needed at stores, such as a hard disk. Under the present circumstances, it is possible to specify and save the image data format to save.
[0011]
[Problem(s) to be Solved by the Invention] In a Prior art, in order to perform a scan, a user needs to

make starting actuation of a scanning program, and directions actuation of scanning initiation. Moreover, in order to save the scanned image data, it also needs to be operated for performing it. Such actuation had the problem of being complicated.

[0012] In addition, when performing a scan, various setup of the image data format at the time of saving color mode, manuscript size, resolution, and the scanned image data etc. had to be performed, and there were this setting actuation and a problem of being complicated.

[0013] This invention aims at offering the scanner server which can perform easily a setup concerning the conditions of a scan, and/or the data format of image data, and its control approach, in order to solve the above-mentioned trouble.

[0014]

[Means for Solving the Problem] In order to solve the above-mentioned problem, the scanner server of this invention is equipped with the following configurations. Namely, answer directions from an external instrument and actuation of the scanner which reads a manuscript is controlled. It is a scanner server holding the image data transmitted from the scanner concerned. A memory means to memorize a file including the setting information on the conditions of reading in said scanner, and the data format of the image data to save which starts either at least, A presentation means to show said setting information included in said external instrument at each file, The control means controlled to make it read on said scanner and to hold image data according to said setting information included in the file chosen with said external instrument through said presentation means, It is characterized by having a transmitting means to transmit said held image data to said external instrument by the file name concerned.

[0015]

[Embodiment of the Invention] Hereafter, the suitable operation gestalt of this invention is explained to a detail with reference to a drawing.

[0016] (Operation gestalt 1) Drawing 1 is drawing showing the image processing system concerning this operation gestalt.

[0017] An image processing system 1 begins the scanner section 2 which scans the manuscript put on the manuscript base and generates digital image data, and is equipped with the following configurations.

[0018] CPU by which 3 controls the image processing system 1 whole, the hard disk which memorizes the image data by which 4 was generated, the memory on which 5 functions as main storage, the network interface to which 6 takes the interface of an image processing system 1 and an external instrument, and 50 are internal buses. The function as a scanner server which carries out these configurations and controls the scanner section 2 is realized.

[0019] Moreover, the scanning program which controls the drive of a scanner 2 and performs various processings to the generated image data is stored in the hard disk 4.

[0020] It is the color mode of a RGB color or gray scale, and the scanner section 2 in an operation gestalt can scan the manuscript of A4 or A3 size in the resolution of the arbitration of 600 or less dpi.

[0021] The client PC 7 as an external instrument is connected to the image processing system 1 through the network 51. Client PC receives the generated image data while directing reading to an image processing system 1.

[0022] A client PC 7 is the so-called personal computer, and it is constituted so that the volume which equipments, such as a file server which can communicate, exhibit through a network may be mounted on the operating system of a client PC 7 and it can use as a network drive as the same storage as the integral hard disk (not shown) of a client PC 7 etc. Management of a drive, a directory, and a file is made and two or more directories are included in each drive hierarchical, and multiple files are contained and it sells at this operating system to each directory.

[0023] If the power source of an image processing system 1 is switched on, the scanning program memorized by the hard disk 4 will be read into memory 5, and a program will be in ready condition by CPU3. This program is a configuration containing the network control module for processing various protocols and services required for a communication link in the image transmitting module for transmitting the file system administrative module for opening the control module and virtual file which

control a scanner 2 to a client PC 7 through a network 51, and the scanned image data to a client PC 7 through a network 51, and a network etc.
[0024] An image processing system 1 exhibits one volume of a name called ScanData to a client PC 7 through a network 51. Two or more imagination files for the data generated by scan are included in this volume, and sell to it. That to which the user created what was prepared beforehand shall be used for these imagination files, and four files, A4-600 dpi-RGB.jpg, A4-200 dpi-RGB.jpg, A4-600 dpi-Mono.jpg, and A3-300 dpi-RGB.jpg, shall exist in this volume beforehand in this operation gestalt.
[0025] If a user mounts the volume which the image processing system 1 exhibits in a client PC 7, it is possible to treat the imagination file of two or more above-mentioned scanning data in the operating system of a client PC 7.
[0026] When scanning a manuscript using an image processing system 1 and saving digital image data as an image file, a user will mount first the volume which the image processing system 1 opens to the client PC 7. This processing is completely the same as the processing whose computers of other mount the volume which a general file server exhibits. This volume is mounted on a client PC 7 by volume name called ScanData as described above.
[0027] Drawing 2 A is drawing showing the example of a screen display offered by the file management software in a client PC 7.
[0028] The window 70 shown in drawing 2 A is a window displayed on the display of a client PC 7, when the volume which the image processing system 1 opens to the client PC 7 is mounted. This window is divided into the subwindow of two right and left like illustration. Volume and a directory are displayed hierarchical by the left-hand side subwindow, and a file list is displayed by the right-hand side subwindow. The file included to the volume or the directory which the user chose using the mouse or the keyboard in the left-hand side subwindow is displayed on a right-hand side subwindow as a file list. In the case of this drawing, ScanData volume is chosen by the left-hand side subwindow, and file A4-600 dpi-RGB.jpg contained in a right-hand side subwindow at ScanData volume corresponding to it, A4-200 dpi-RGB.jpg, A4-600dpi-Mono.jpg, and A3-300 dpi-RGB.jpg (this drawing is shown by 74-77, respectively) are shown the list table.
[0029] Moreover, the window 78 concerning the example of a screen display shown in drawing 2 B is a thing when the Image directory 79 of C drive which is the hard disk built in the client PC 7 is chosen, and the file included to the Image directory 79 is shown in a right-hand side subwindow a list table (in being illustration, it shows that the file is not included in the directory concerned.).
[0030] In this operation gestalt, in a client PC 7, a user is the window 70 shown in drawing 2 A, and it is possible to make scanning actuation perform by performing actuation which copies a desired virtual file (for example, A3-300 dpi-RGB.jpg).
[0031] Drawing 3 is a flow chart which shows the processing in the image processing system 1 which realizes the above-mentioned actuation. The program corresponding to this flow chart is included in the scanning program memorized by the image processing system 1 as above-mentioned, and is performed by CPU3.
[0032] CPU3 will start the processing corresponding to the flow chart of drawing 3 , if what the ScanData volume currently exhibited was mounted for by the client PC 7 is recognized (step S100).
[0033] At step S101, it stands by that one of virtual files is chosen and read. Processing which the file is chosen by the copy actuation to the file in a client PC 7 etc., and reads the file with an image processing system 1 by it will be performed. Here, in a client PC 7, it is assumed that actuation which copies a virtual file 77 (A3-300 dpi-RGB.jpg) in the window 70 shown in drawing 2 A was performed. Since a virtual file 77 will be read by this, it progresses to step S102 after that.
[0034] The file name of a virtual file 77 is analyzed at step S102. As contents to analyze, it is assignment of the manuscript size contained in a file name, color mode, and resolution.
[0035] For example, when the character string of "A3" is contained in a file name and, as for manuscript size, there is no character string of A3 size and "A3", it is judged that manuscript size is A4 size. Moreover, when the character string of "RGB" is contained in a file name, it judges that color mode is a RGB color, and when the character string of "RGB" is not contained in a file name, it is judged that

color mode is gray scale. Similarly, when the character string of "-XXXdpi [-]" (however, XXX shows a numeric value among these) is contained in a file name, the numeric value is judged to be resolution.
[0036] Since a virtual file 77 is a file name of "A3-300 dpi-RGB.jpg", as for A3 and color mode, a RGB color will be obtained, and, as for manuscript size, an analysis result with 300dpi will be obtained, as for resolution.
[0037] Next, it progresses to step S103 and judges whether manuscript size is A4 as a result of the file name analysis in step S102. Here, in the case of A4, it progresses at step S104, and A4 is set as the scanning size variable SIZE. When that is not right, it progresses to step S105, and A3 is set as the scanning size variable SIZE.
[0038] Next, it progresses to step S106 and judges whether color mode is a RGB color as a result of the file name analysis in step S102. Here, in the case of RGB, it progresses at step S107, and RGB is set as the color mode variable MODE. When that is not right, it progresses to step S108, and Grayscale is set as the color mode variable MODE.
[0039] Then, the resolution value acquired in the file name analysis in step S102 is set as the resolution variable DPI at step S109.
[0040] Next, a scanning initiation instruction is transmitted to the scanner section 2 at step S110 with the scanning size variable SIZE, the color mode variable MODE, and the resolution variable DPI. In the case of a virtual file 77, it is set to scanning size variable SIZE=A3, color mode variable MODE=RGB, and resolution variable DPI=300.
[0041] And the scanner section 2 will start a scan in the manuscript size of assignment of the manuscript put on the manuscript base of the scanner section 2 in response to the transmitted instruction, color mode, and resolution. The scanned image data is transmitted from the scanner section 2 through an internal bus 50, and is memorized by memory 5. It performs repeatedly, judging whether it is termination at a scan and step S111.
[0042] After all image data is transmitted from the scanner section 2, at step S112, for example, JPEG compression processing is made and the image data memorized by memory 5 is temporarily held as an image file on a hard disk 4. This image file is the JPEG image which scanned the manuscript of A3 size by RGB color 300dpi.
[0043] After record completing to a hard disk 4, CPU3 carries out transmitting initiation of the image file currently held on the hard disk 4 at step S113 at a client PC 7. This transmitting processing returns to step S101, when it is carried out and completes, judging whether data transmission was completed at step S114.
[0044] The virtual file 77 was copied to the client PC 7 by the above processing. Since the copied file is the usual image data file, naturally it can perform use with other applications, the transmission attached to e-mail, migration, the re-copy to another directory, etc. like the usual file.
[0045] It is possible to generate easily the image data which scans by setup of the scan according to the file name of a virtual file by operating a virtual file according to this operation gestalt as explained above, and has a real image.
[0046] Effectiveness peculiar to this operation gestalt is as hanging up over below.
- Since image processing system 1 the very thing has both a scanning function and a scanner server function, it is possible to build the image input system of this invention by low cost.
- If the virtual file which has a file name from which a user becomes a setup used frequently is prepared in order to perform a scan by setup according to the file name of a virtual file, a scan can be performed, without carrying out a setup which was conventionally required at the time of scanning activation.
- In addition, if two or more virtual files are prepared, a scan can be performed by operating the virtual file of a file name which serves as setting [to wish] up, without changing a setup.
- Since the file name of the real image file generated by actuation of a virtual file is the same as the file name of a virtual file, it can distinguish easily by what kind of setup the scan was performed.
[0047] In addition, in this operation gestalt, although explained as that in which image processing system 1 the very thing has both a scanning function and a scanner server function, scanner ability and a scanner server function may be separated respectively independent equipment.

[0048] Moreover, it is possible to deal with actuation in which access is made by the general file of performing OCR processing (optical character recognition) which attaches to an electronic mail and transmits an image file, and generating a text file to which actuation of a virtual file is not limited to this and a virtual file is opened with application although copy actuation was explained as actuation of a virtual file in this operation gestalt.
[0049] (Operation gestalt 2) Drawing 4 is drawing showing the image processing system containing the scanner server concerning another operation gestalt.
[0050] The image processing system in this operation gestalt consists of clients PC 40 which receive the generated image data while it connects with the scanner equipment 41 which reads a manuscript, the scanner server 42 connected to scanner equipment 41, and the scanner server 42 and it directs reading of a manuscript.
[0051] The scanner server 42 begins CPU43 which controls the whole server, the hard disk 44 which memorizes image data, and the memory 45 which functions as main storage, and is equipped with the interface 48 defined by USB specification for performing a communication link with scanner equipment 41 through the network interface 46 and the scanner cable 62 which take the interface for communicating with a client PC 40 through a network 61, and an internal bus 47.
[0052] Drawing 5 is drawing showing an example of the user interface screen of the client PC 40 which operates the virtual file which the scanner server 42 exhibits. With this operation gestalt, the scanner server 42 opens a virtual file to a client PC 40 for example, with a HTTP protocol. The user interface in the client PC 7 shown in drawing 5 is offered by the web browser application for performing browsing of World Wide Web. In this drawing, it is the virtual file to which a viewing window opens 75 and the scanner server 42 opens 80, 81, and 82, respectively.
[0053] Web browser application can be drawn based on image data which received by the communication link according to HTTP, such as HTML data and a JPEG format.
[0054] Next, the outline of actuation of the scanner server 42 interior is explained.
[0055] In the scanner server 42, the web server application which functions as a server of a HTTP protocol is operating. Generally in a HTTP protocol, the information-requirements command like GET index.html to a server "GET", and a command including the contents of a demand which follow it like "index.html" are published from a client, and the data corresponding to "index.html" are published to the client which published the command in response to this command in a server side.
[0056] The web server application which is operating on the scanner server 42 will perform processing shown in the flow chart of drawing 6 , if the GET command which is the information requirements from a client is received.
[0057] Moreover, the scanner server 42 and a client PC 40 can communicate with a TCP/IP protocol through a network 61, the scanner server 42 shall be accessible from a client PC 40 at a host name called www.scanimage.co.jp, a virtual file shall be defined as the bottom of a directory called scan, and three virtual files called image.tiff, image.gif, and image.jpeg shall be defined beforehand.
[0058] The driver software for controlling scanner equipment 41 through the USB interface 48 is built into the operating system of the scanner server 42, and web server application can acquire image data from scanner equipment 42 using this driver software.
[0059] When a user wants to scan a manuscript from the scanner equipment 41 connected to the scanner server 42, http://www.scanimage.co.jp/scan/index.html which is URL used since information to perform and display web browser application in a client PC 40 first is specified is inputted.
[0060] In web browser application, if URL is inputted, the URL will be analyzed, and it specifies to which equipment information requirements are published. When http://www.scanimage.co.jp/scan/index.html is inputted as URL, in order to acquire the information of scan/index.html to www.scanimage.co.jp42, i.e., a scanner server, an instruction called GET scan/index.html is published.
[0061] The web server application which operates on the scanner server 42 which received this instruction is scan/index.html of the HTML format containing the hyperlink to a virtual file prepared beforehand. Data are transmitted to a client PC 40.

[0062] An example of the contents of scan/index.html is shown in drawing 8 .
[0063] The web browser application of a client PC 40 receives this data, and draws in a window based on data. The drawn window is the user interface screen shown in drawing 6 .
[0064] It is possible to require the associated information by embedding the hyperlink information which defines correlation with other information in the data of a HTML format, and operating this.
[0065] If a user operates the hyperlink 80 to virtual-file image.gif in the user interface screen 75 of drawing 6 here, as for web browser application, /scan/image.gif will be required from www.scanimage.co.jp42, i.e., a scanner server.
[0066] The scanner server 42 reads the manuscript set in scanner equipment 41 in response to this demand, generates the real image data of image.gif, and transmits to a client PC 7. The web browser application of the client PC 7 which received real image data displays this image for the received data in a window as image data of a GIF format.
[0067] Drawing 6 is a flow chart which shows the processing in the scanner server 42 which realizes actuation of the above image processing system. The program corresponding to this flow chart is included in web server application, and is performed by CPU43. If the scanner server 42 receives information requirements with a HTTP protocol, this processing will begin (step S200).
[0068] At step S201, the demanded information judges whether it is an image. In the case of an image, it progresses at step S203, and when that is not right, step S202 is performed. In one case of /scan/image.tiff, /scan/image.gif, and /scan/image.jpeg, in an image and /scan/index.html, the demanded information judges decision of being an image not to be an image, for example.
[0069] The data of scan/index.html prepared beforehand are transmitted at step S202.
[0070] At step S203, it judges whether the demanded information is the file of a TIFF format. When the demanded information is the file (for example, /scan/image.tiff) of a TIFF format, it progresses to step S205, and a TYPE variable is set as tiff and it progresses to step S208. When the demanded information is formats other than TIFF, it progresses to step S204.
[0071] At step S204, it judges whether the demanded information is the file of a GIF format. When the demanded information is the file (for example, /scan/image.gif) of a GIF format, it progresses to step S206, and a TYPE variable is set as gif and it progresses to step S208. If the demanded information is not a GIF format, it progresses to step S207, and a TYPE variable will be set as jpeg and it will progress to step S208.
[0072] At step S208, a scanning activation initiation command is published to scanner equipment 41. Scanner equipment 41 will start a scan according to this. At step S209, it is supervising whether the scan was completed or not. And the image data scanned from scanner equipment 41 is received at step S210.
[0073] At step S211, a TYPE variable judges whether it is tiff. When a TYPE variable is tiff, the image data which progressed to step S213 and received is changed into the image data of a TIFF file format, and it saves at a hard disk 44, and it progresses to step S216. When a TYPE variable is not tiff, it progresses to step S212.
[0074] At step S212, a TYPE variable judges whether it is gif. When a TYPE variable is gif, the image data which progressed to step S214 and received is changed into the image data of a GIF file format, and it saves at a hard disk 44, and it progresses to step S216. When a TYPE variable is not gif, the image data which progressed to step S215 and received is changed into the image data of a JPEG file format, and it saves at a hard disk 44, and it progresses to step S216.
[0075] At step S216, the image data currently held at the hard disk 44 is transmitted to a client PC 40.
[0076] A virtual scan file is opened to a client PC 40 with the HTTP protocol used in the Internet on the scanner server 42 connected to common scanner equipment 41 by the above processing. Moreover, it is possible for a file name to determine the graphics file format of the real image data to transmit, and to generate the image file according to it.
[0077] Effectiveness peculiar to this operation gestalt is as hanging up over a degree.
- It becomes possible to acquire the image data of the data format for which a user wishes according to the file name of a virtual file, without performing a complicated setup.
- Since a client side should just prepare general-purpose application called a web browser, it can build a

system easily.
- Since it is realizable with the combination of a common scanner and a common computer, the existing property can be diverted.
[0078]
[Other operation gestalten] As mentioned above, although the operation gestalt of this invention was explained in full detail, even if it applies this invention to the system which consists of two or more devices (for example, a host computer, an interface device, a reader, a printer, etc.), it may be applied to the equipments (for example, a copying machine, facsimile apparatus, etc.) which consist of one device.
[0079] In addition, this invention supplies the program (program corresponding to the flow chart of drawing 3 and/or drawing 6) of the software which realizes the function of the operation gestalt mentioned above to a system or equipment from direct or remoteness, and includes the case where it is attained also when the computer of the system or equipment reads and executes the supplied program.
[0080] Therefore, in order for a computer to realize functional processing of this invention, the program code itself installed in the computer realizes this invention. That is, the computer program for realizing functional processing of this invention itself is contained in the claim of this invention.
[0081] In that case, if it has the function of a program, the program performed by object code and the interpreter, the script data supplied to OS will not ask the gestalt of a program.
[0082] As a storage for supplying a program, there are a flexible disk, optical disks (CD-ROM, CD-R, CD-RW, DVD, etc.), a magneto-optic disk, a magnetic tape, a memory card, etc., for example.
[0083] In addition, the mode which acquires the program of this invention by the file transfer through the Internet as the supply approach of a program is also contained.
[0084] Moreover, it is also possible to encipher the program of this invention, to store in storages, such as CD-ROM, to supply a user widely, to make the key information which solves encryption through the Internet acquire to the user who cleared predetermined conditions, and to realize by executing the program enciphered by using the key information, and making it install in a computer.
[0085] Moreover, the function of the operation gestalt mentioned above by executing the program which the computer read is realized, and also based on directions of the program, a part or all of processing that OS which is working on a computer is actual is performed, and the function of the operation gestalt mentioned above by the processing may be realized.
[0086] Furthermore, after the program read from the storage is written in the memory with which the functional expansion unit connected to the functional add-in board inserted in the computer or the computer is equipped, a part or all of processing that CPU with which the functional add-in board and functional expansion unit are equipped is actual performs, and the function of the operation gestalt which mentioned above also by the processing is realized based on directions of the program.
[0087]
[Effect of the Invention] According to this invention, the scanner server which can perform easily a setup concerning the conditions of a scan and/or the data format of image data, and its control approach can be offered.

[Translation done.]